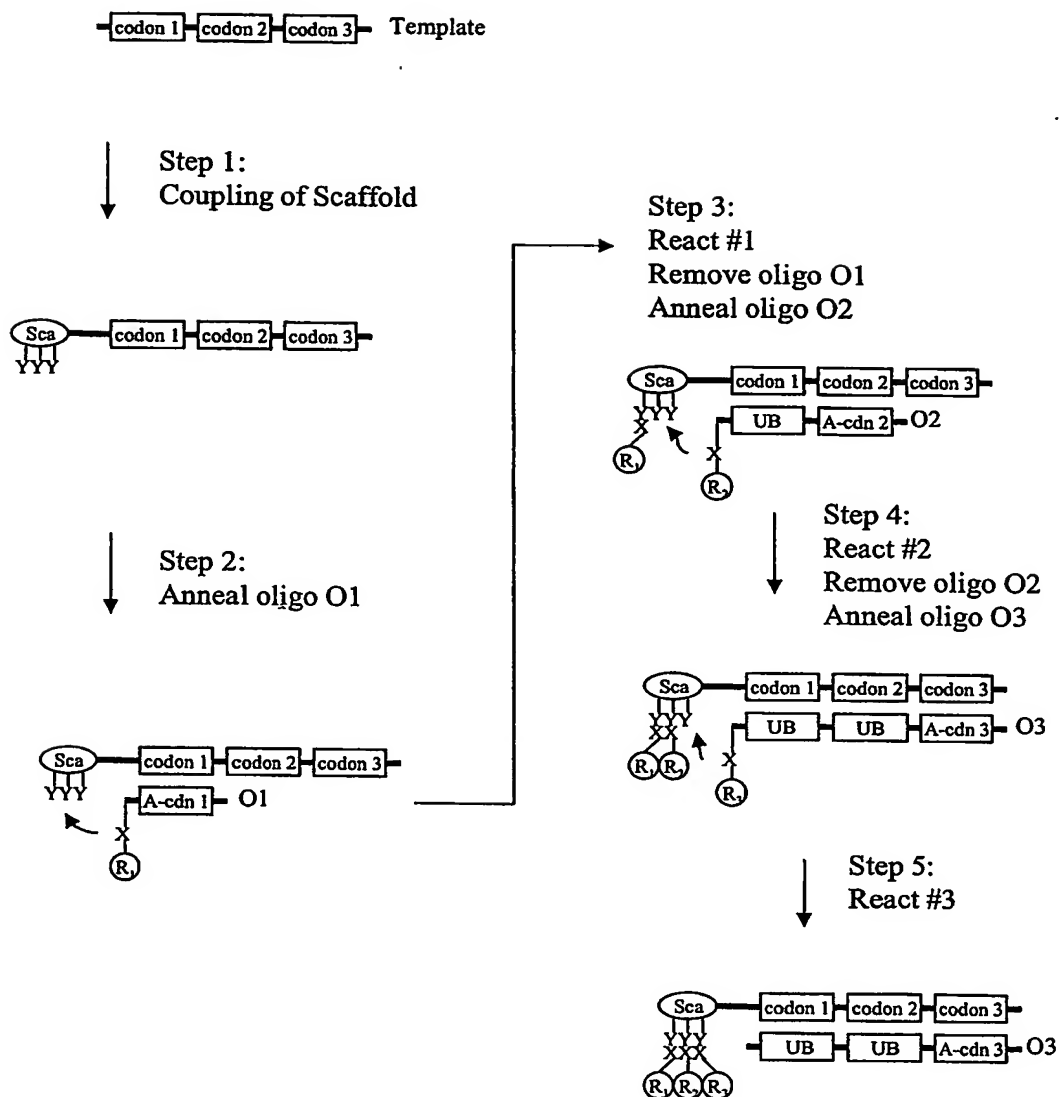


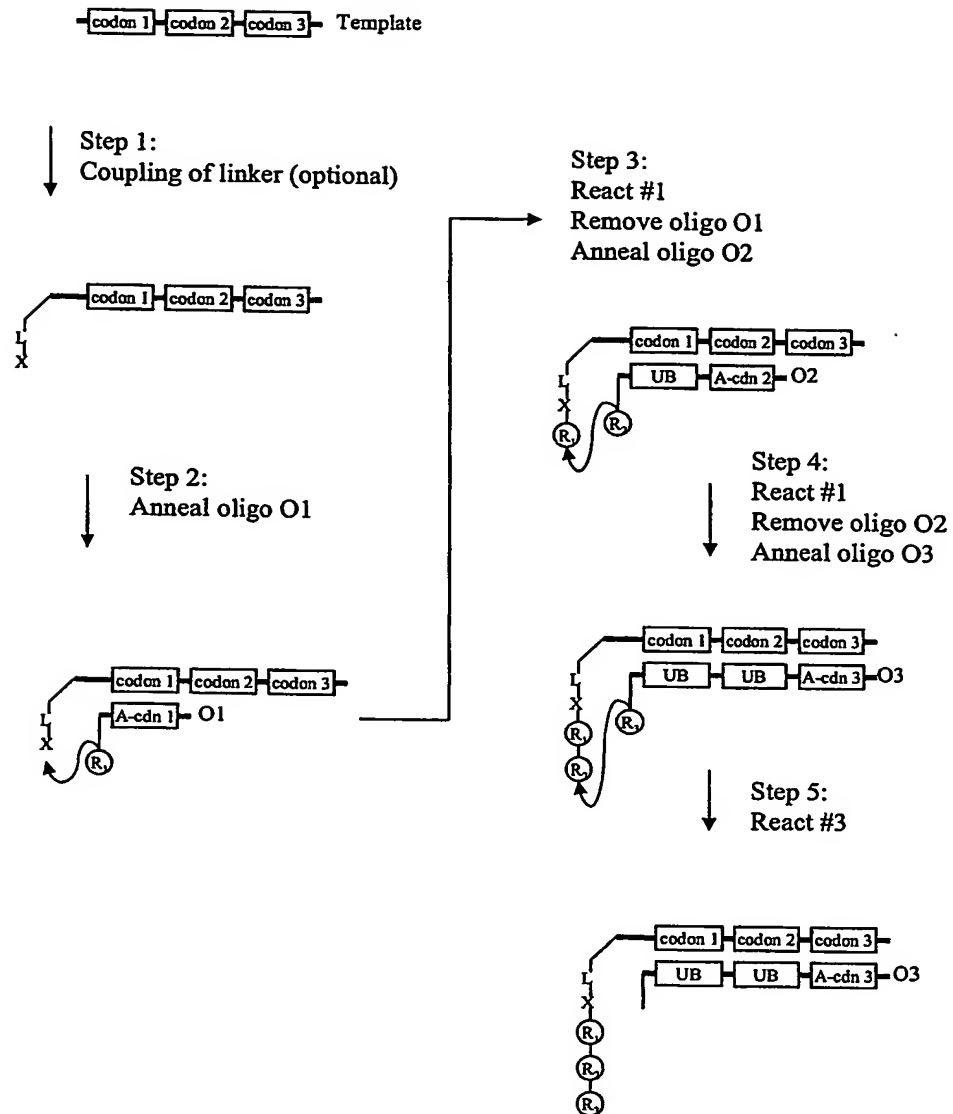
1/25

Fig.1



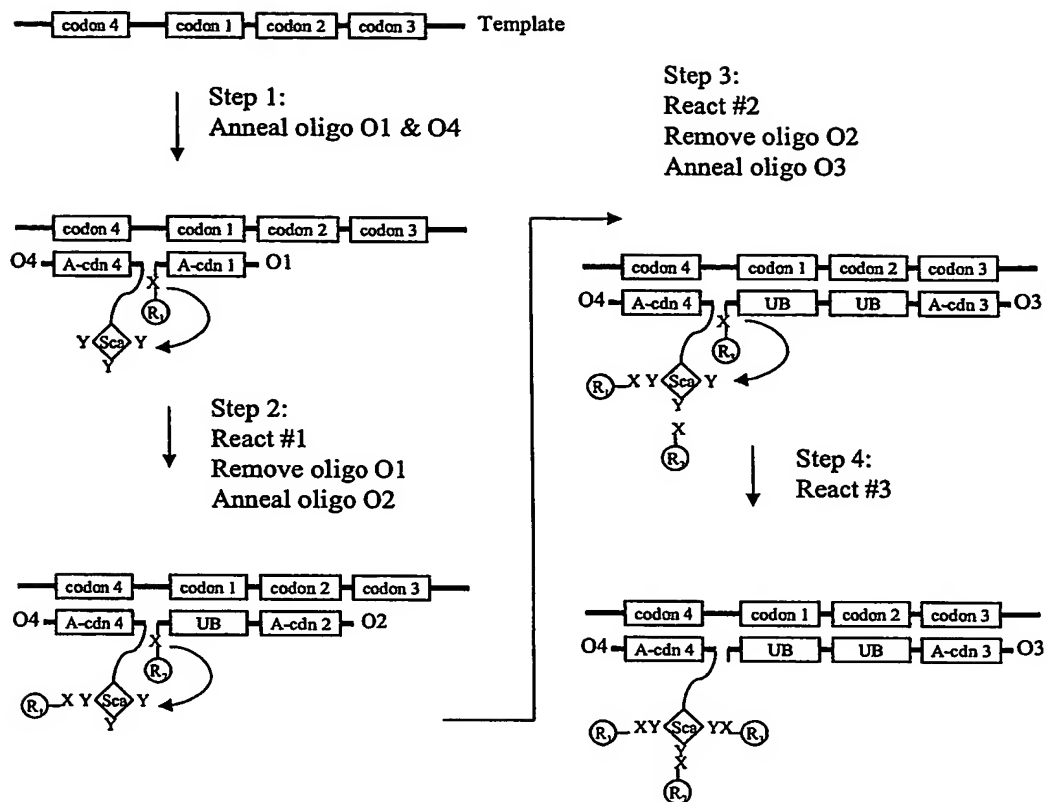
2/25

Fig. 2



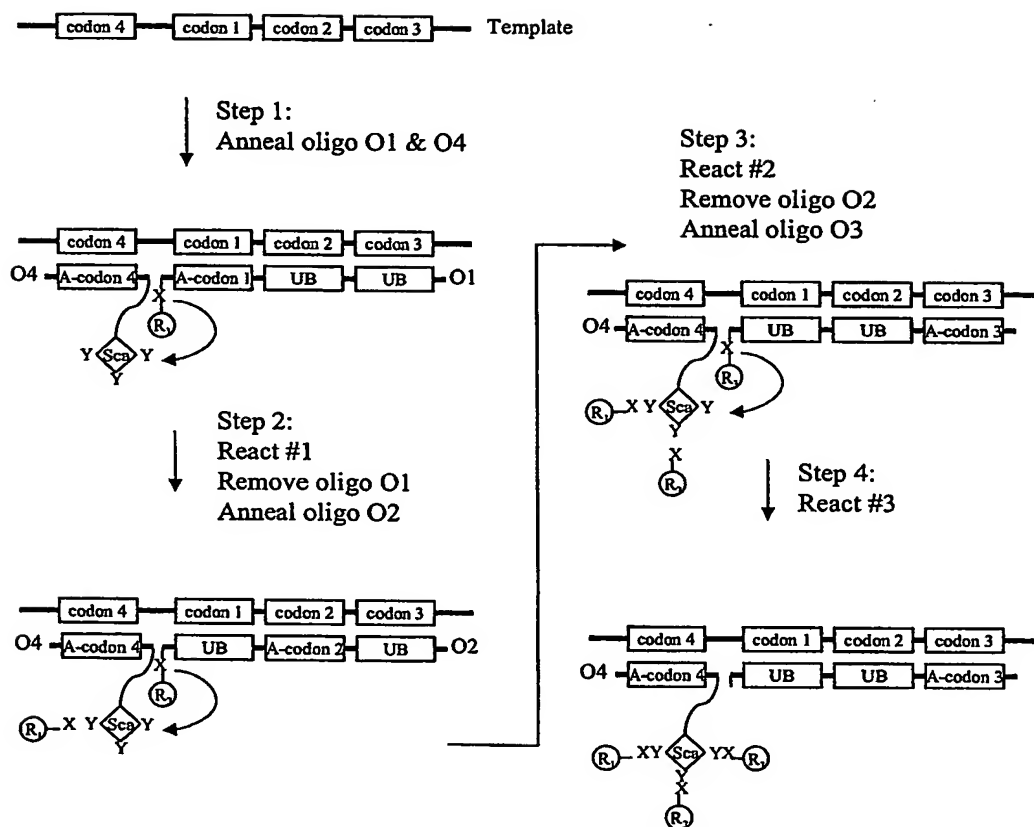
3/25

Fig. 3



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Fig 4



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Fig.5

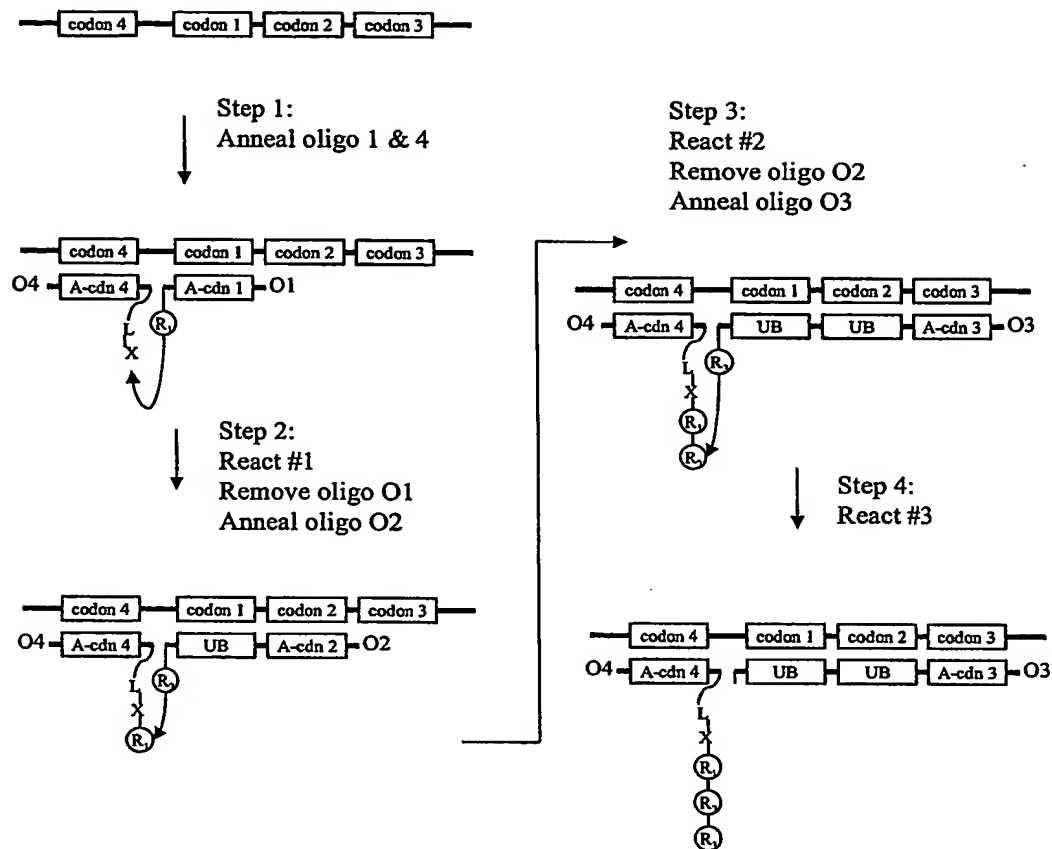


Fig. 6

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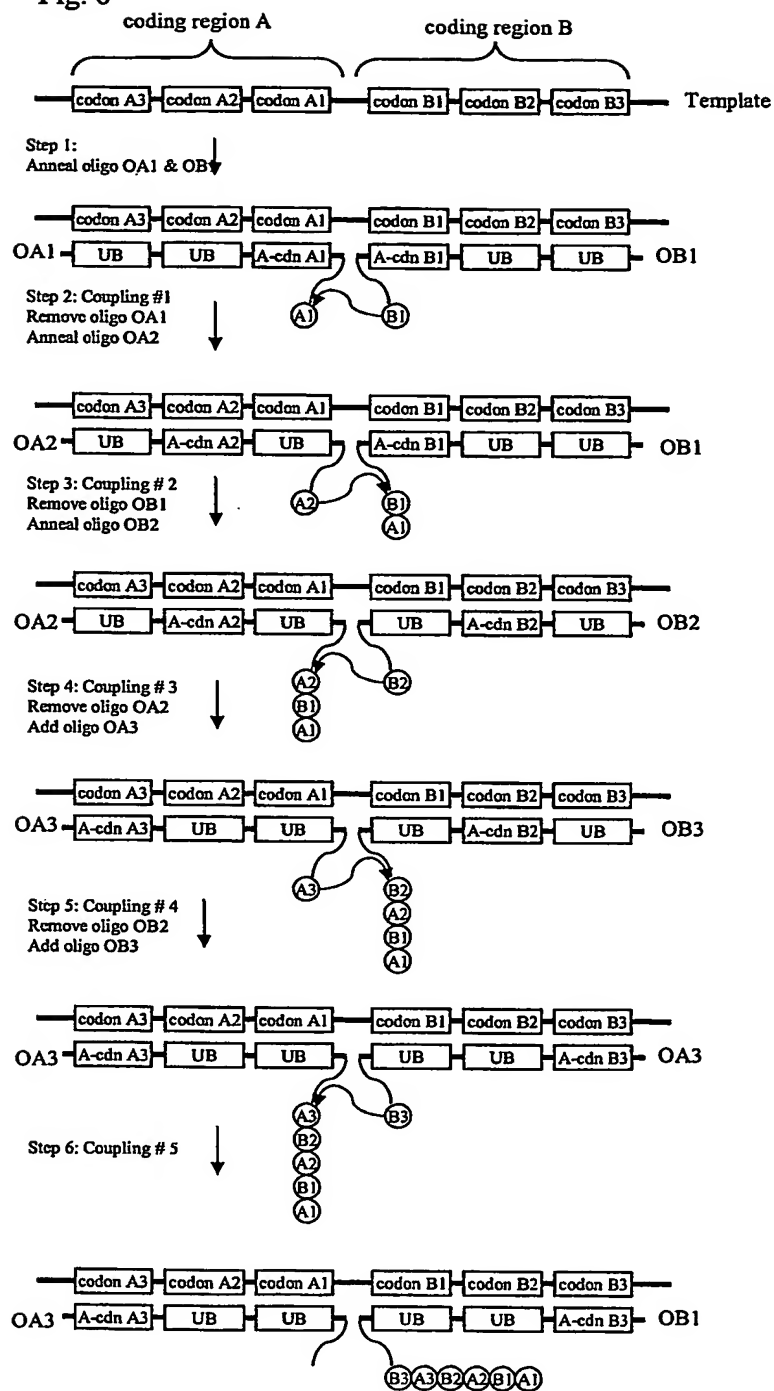
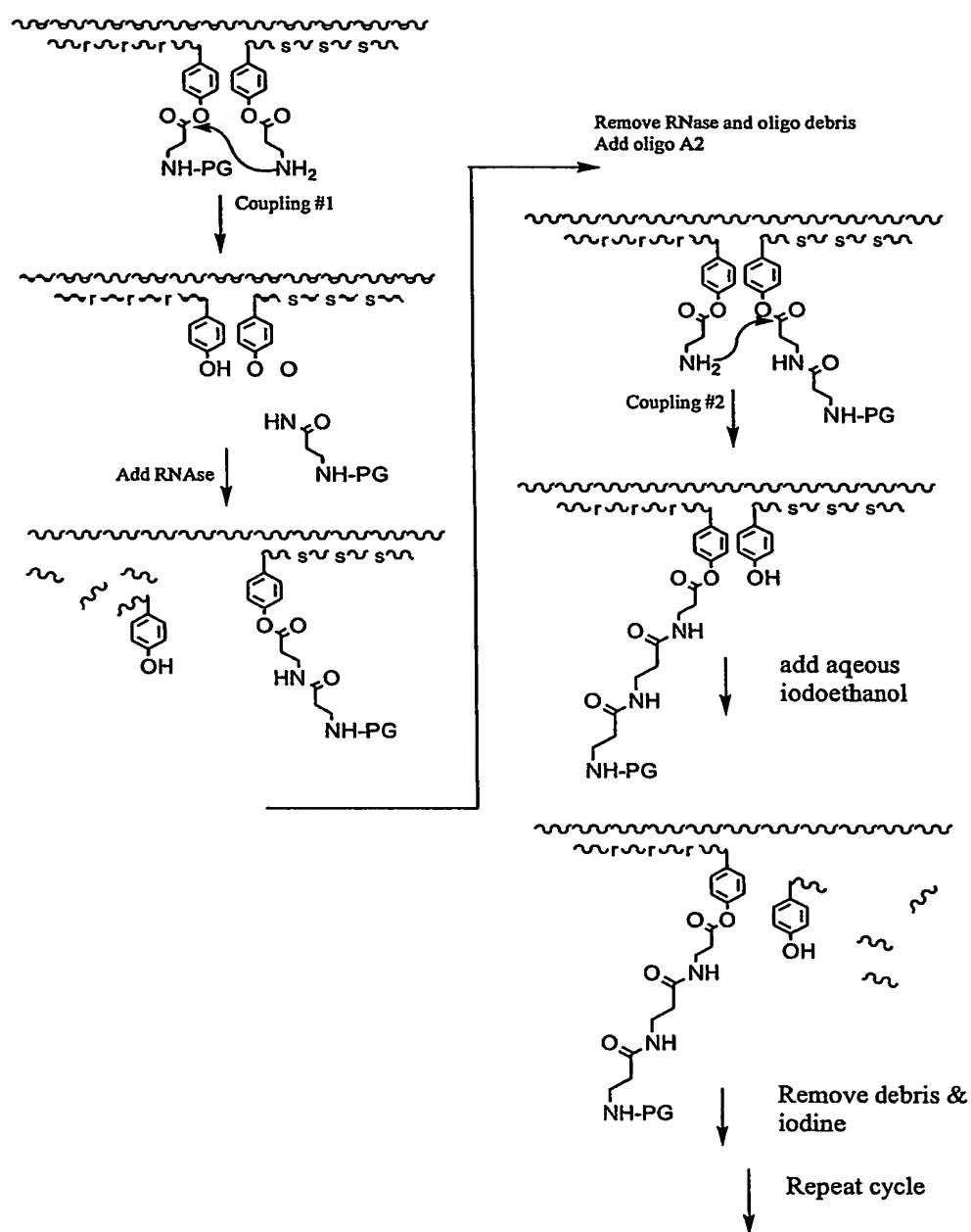
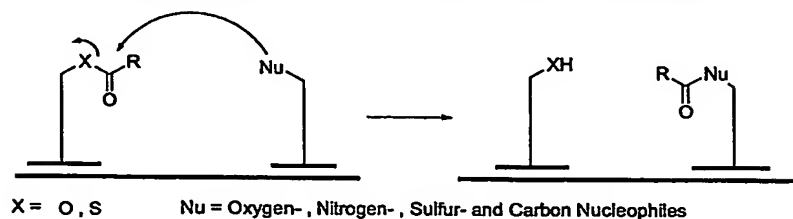
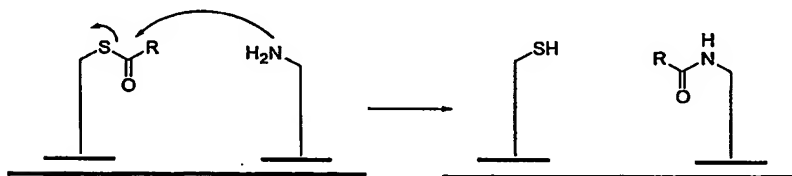
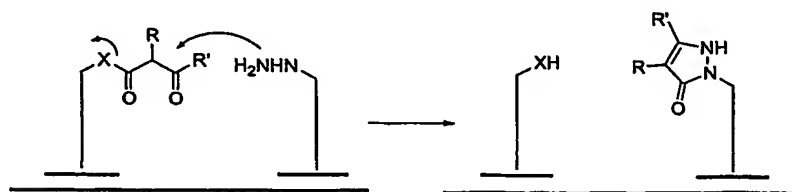


Fig. 7

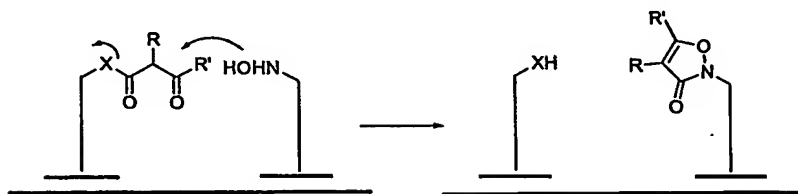
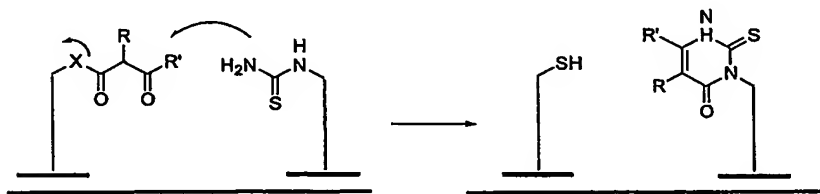
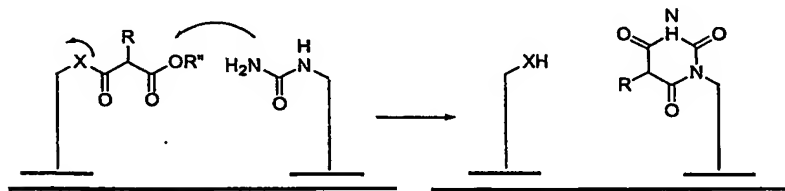
7/25



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Fig. 8**A. Acylating monomer building blocks - principle****B. Acylation****Amide formation by reaction of amines with activated esters****C. Acylation****Pyrazolone formation by reaction of hydrazines with β -Ketoesters**

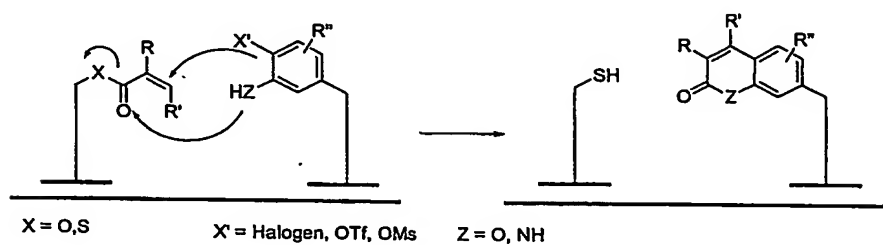
9/25

D. Acylation**Isoxazolone formation by reaction of hydroxylamines with β -Ketoesters****E. Acylation****Pyrimidine formation by reaction of thioureas with β -Ketoesters****F. Acylation****Pyrimidine formation by reaction of ureas with Malonates**

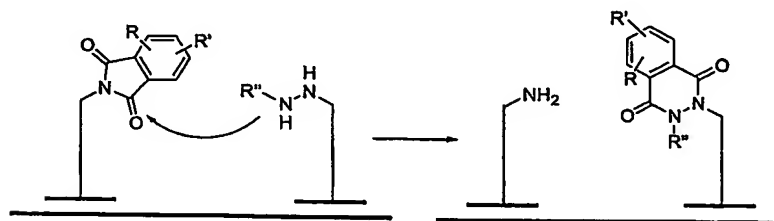
10/25

G. Acylation

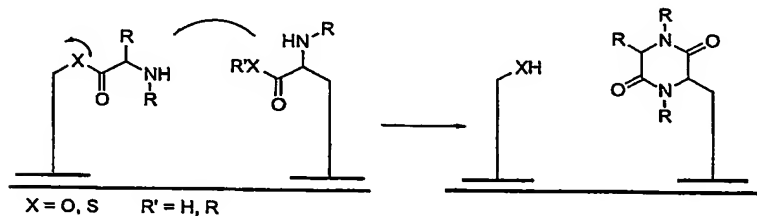
Coumarine or quinolinon formation by a Heck reaction followed by a nucleophilic substitution

**H. Acylation**

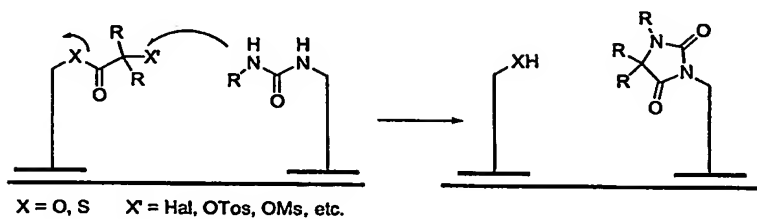
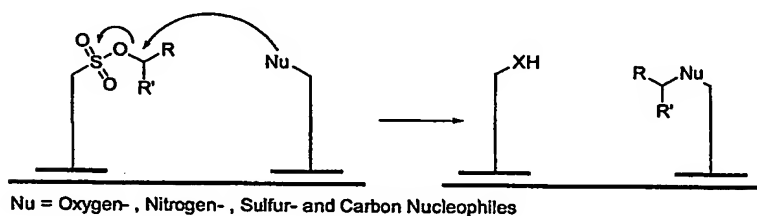
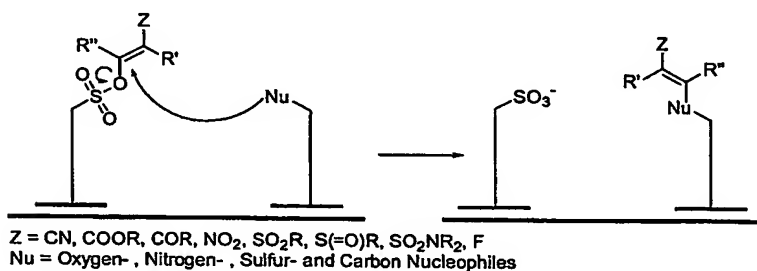
Phthalhydrazide formation by reaction of Hydrazines and Phthalimides

**I. Acylation**

Diketopiperazine formation by reaction of Amino Acid Esters



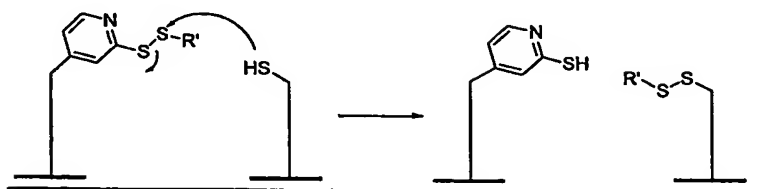
11/25

J. Acylation**Hydantoin formation by reaction of Urea and α -substituted Esters****K. Alkylating monomer building blocks - principle****Alkylated compounds by reaction of Sulfonates with Nucleophiles****L. Vinylating monomer building blocks - principle**

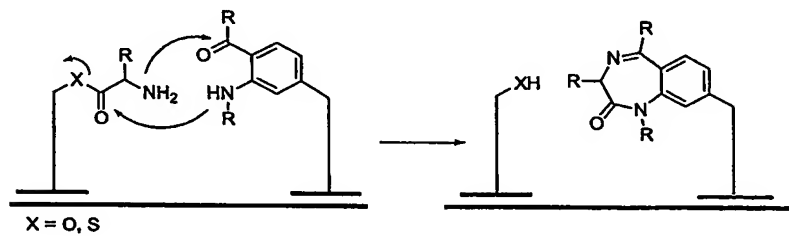
12/25

M. Heteroatom electrophiles

Disulfide formation by reaction of Pyridyl disulfide with Mercaptanes

**N. Acylation**

Benzodiazepinone formation by reaction of Amino Acid Esters and Amino Ketones

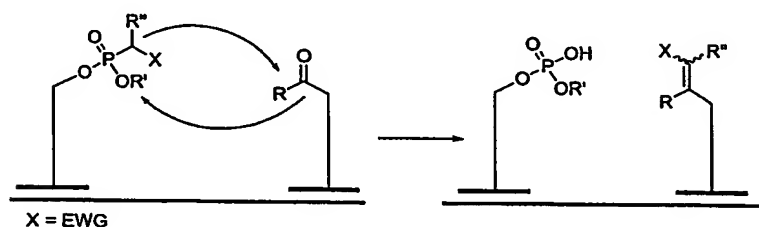


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Addition to carbon-hetero multiple bonds

O. Wittig/Horner-Wittig-Emmons reagents

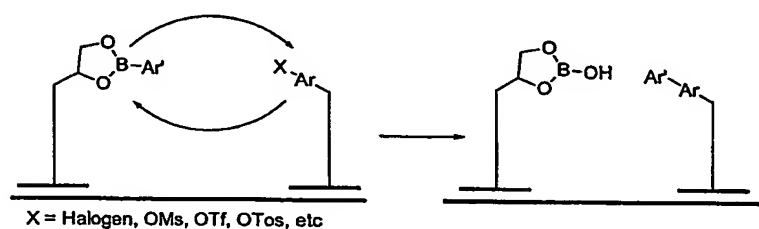
Substituted alkene formation by reaction of Phosphonates with Aldehydes or Ketones



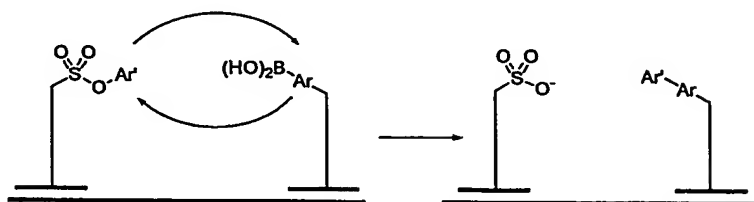
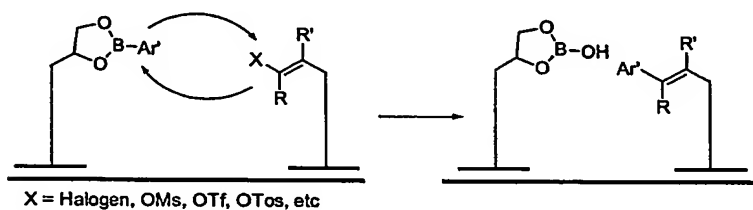
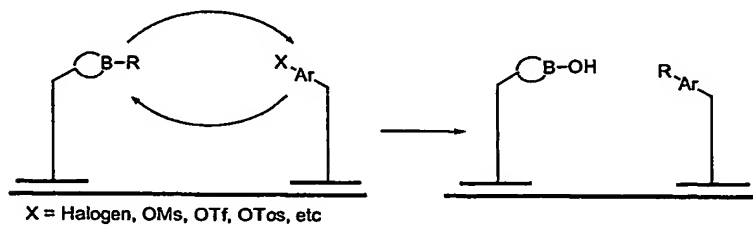
Transition metal catalysed reactions

P. Arylation

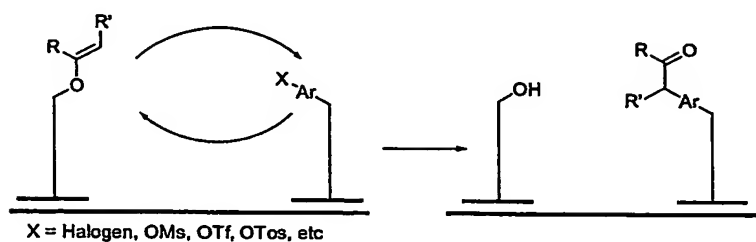
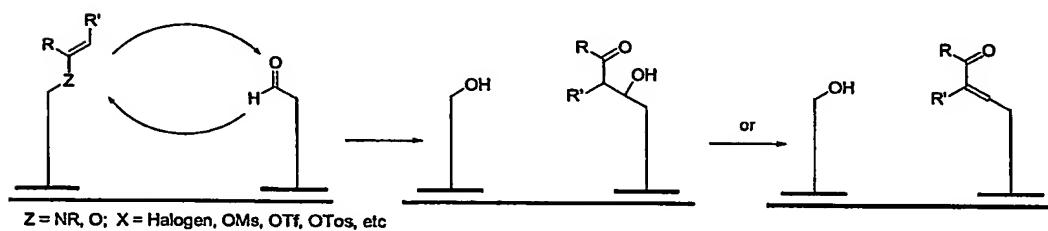
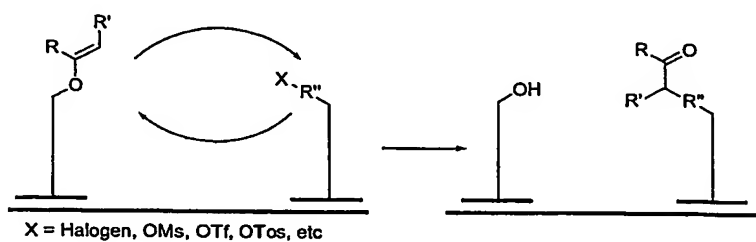
Biaryl formation by the reaction of Boronates with Aryls or Heteroaryls



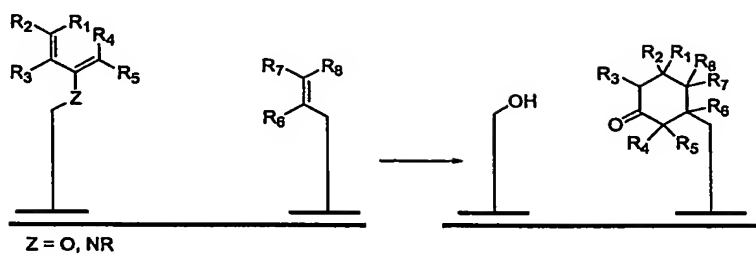
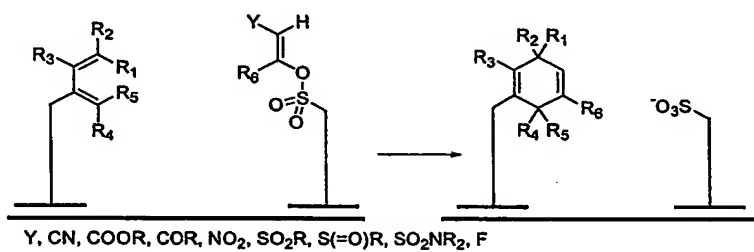
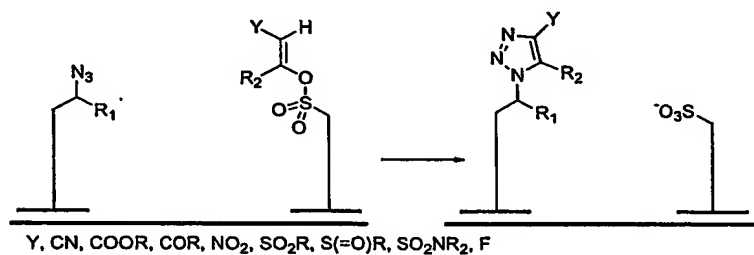
14/25

Q. Arylation**Biaryl formation by the reaction of Boronates with Aryls or Heteroaryls****R. Arylation****Vinylarene formation by the reaction of alkenes with Aryls or Heteroaryls****S. Alkylation****Alkylation of arenes/heterarenes by the reaction with Alkyl boronates**

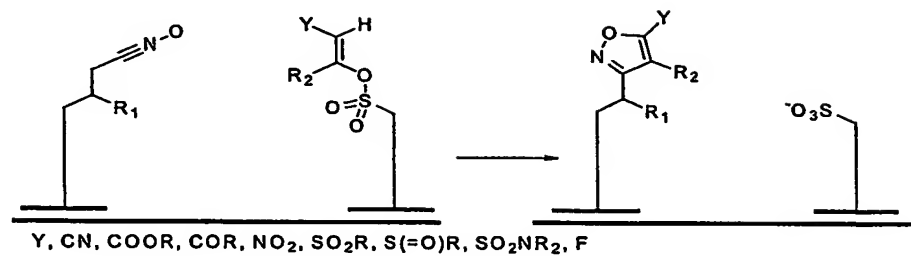
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T. Alkylation**Alkylation of arenas/hetarenes by reaction with enolethers****Nucleophilic substitution using activation of nucleophiles****U. Condensations****Alkylation of aldehydes with enolethers or enamines****V. Alkylation****Alkylation of aliphatic halides or tosylates with enolethers or enamines**

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Cycloadditions**W. [2+4] Cycloadditions****X. [2+4] Cycloadditions****Y. [3+2] Cycloadditions**

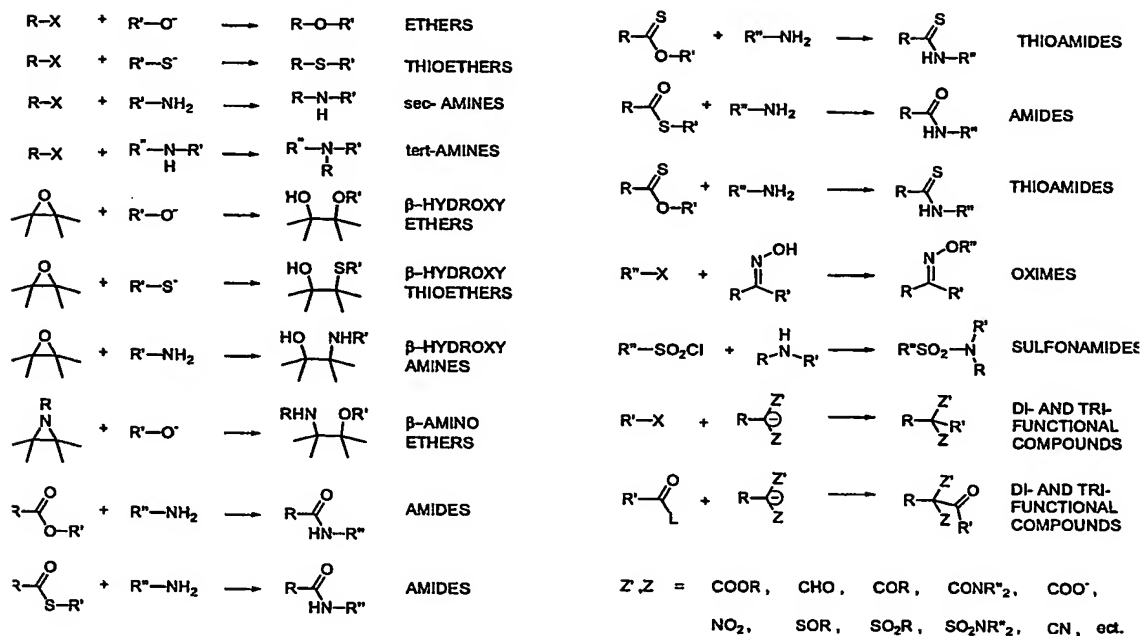
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Z. [3+2] Cycloadditions

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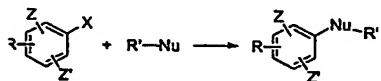
Fig. 9

Nucleophilic substitution reaction



Aromatic nucleophilic substitution

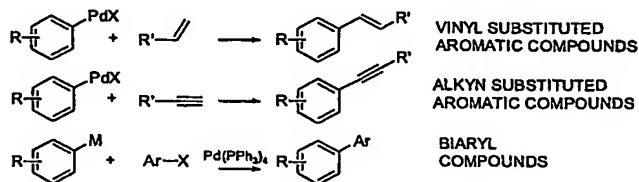
SUBSTITUTED AROMATIC COMPOUNDS



Nu = Oxygen-, Nitrogen-, Sulfur- and Carbon Nucleophiles

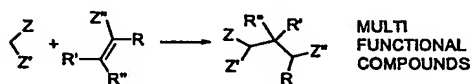
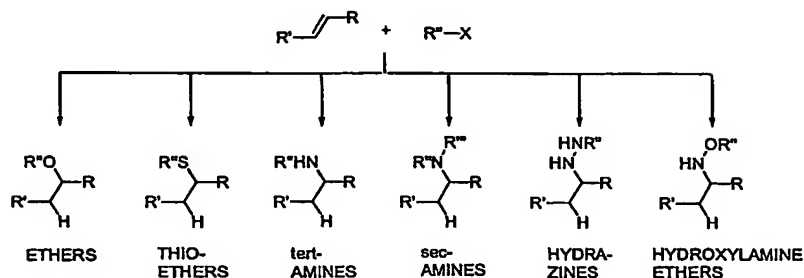
X = F, Cl, Br, I, OSO₂CH₃, OSO₂CF₃, OSO₂TOL, ., etc.Z, Z' = COOR, CHO, COR, CONR''₂, COO⁻, CN, NO₂, SOR, SO₂R, SO₂NR''₂, etc.

Transition metal catalysed reactions

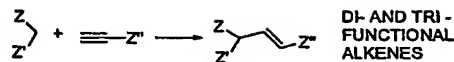


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Addition to carbon-carbon multiple bonds

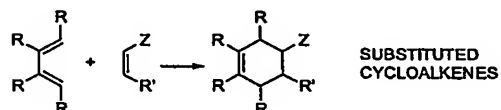
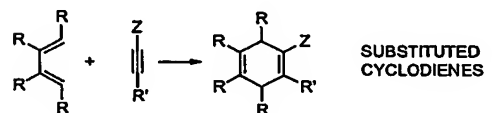
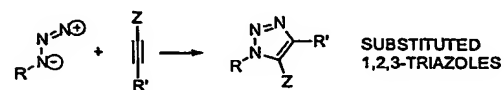
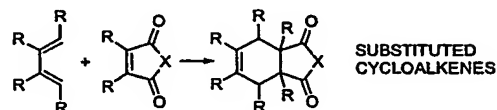
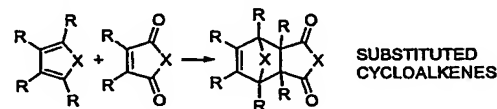
MULTI
FUNCTIONAL
COMPOUNDS

$\text{Z} = \text{H, Alkyl, Ar}$
 $\text{Z}'' = \text{COOR, CHO, COR, CONR}''_2, \text{CN, NO}_2, \text{SOR, SO}_2\text{R, SO}_2\text{NR}''_2, \text{ etc.}$
 $\text{Z}' = \text{Z}'' \quad \text{R} = \text{R}', = \text{R}'', = \text{Z}$

DI- AND TRI-
FUNCTIONAL
ALKENES

$\text{Z} = \text{H, Alkyl, Ar,}$
 $\text{Z}'' = \text{Z}', \text{Alkyl, Ar,}$
 $\text{Z}' = \text{COOR, CHO, COR, CONR}''_2, \text{CN, NO}_2, \text{SOR, SO}_2\text{R, SO}_2\text{NR}''_2, \text{ etc.}$

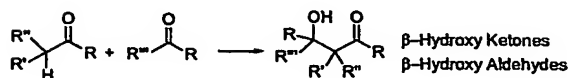
Cycloaddition to multiple bonds

SUBSTITUTED
CYCLOALKENESSUBSTITUTED
CYCLODIENESSUBSTITUTED
1,2,3-TRIAZOLESSUBSTITUTED
CYCLOALKENESSUBSTITUTED
CYCLOALKENES

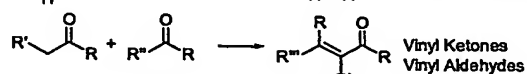
$\text{Z} = \text{COOR, CHO, COR, COOH, COAr, CN, NO}_2,$
 $\text{Ar, CH}_2\text{OH, CH}_2\text{NH}_2, \text{CH}_2\text{CN, SOR, SO}_2\text{R etc.}$
 $\text{R} = \text{H, Alkyl, Ar, Z} \quad \text{X} = \text{O, NR, CR}_2, \text{S,}$

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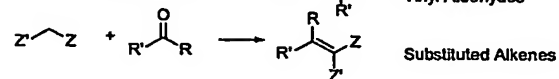
Addition to carbon-hetero multiple bonds



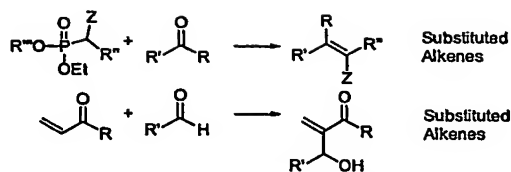
β-Hydroxy Ketones
β-Hydroxy Aldehydes



Vinyl Ketones
Vinyl Aldehydes

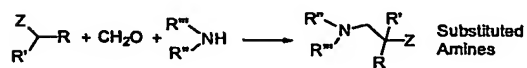


Substituted Alkenes

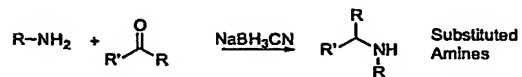


Substituted
Alkenes

Z, Z' = COOR, CHO, COR, CONRⁿ, CN, NO₂, SOR,
SO₂R, SO₂NRⁿ, ect. Rⁿ = H, Alkyl, Aryl



Substituted
Amines



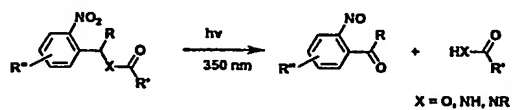
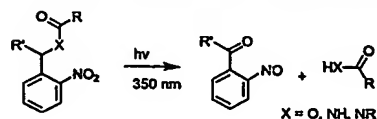
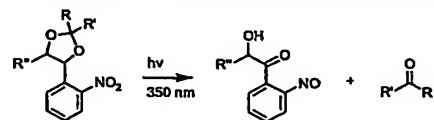
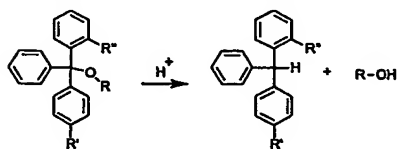
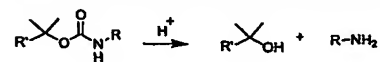
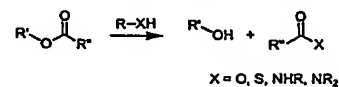
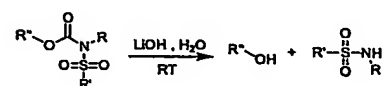
Substituted
Amines

Z = COOR, CHO, COR, SOR, SO₂R, CN, NO₂, ect.

R = R', H, Alkyl, Ar,

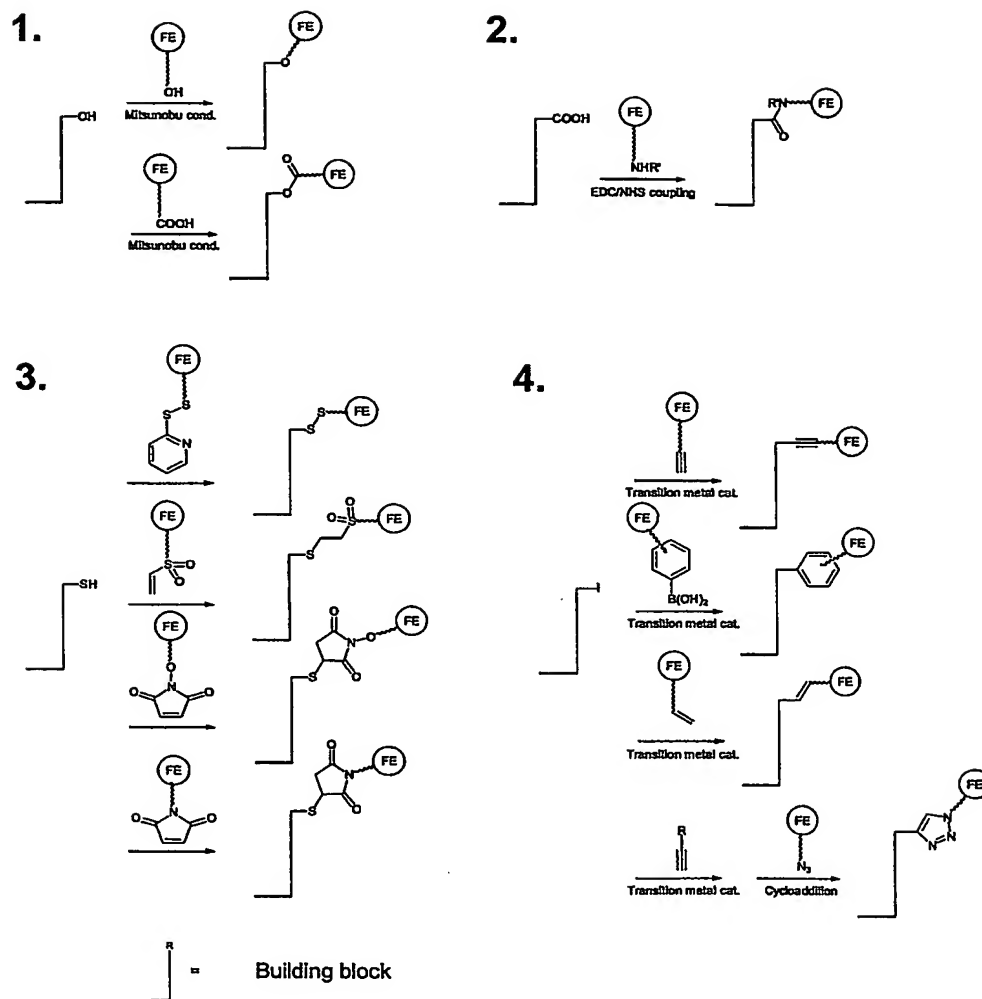
R'' = R'', H, Alkyl, COR,

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Fig. 10 Cleavable Linkers**A. Linker for the formation of Ketones, Aldehydes, Amides and Acids****B. Linker for the formation of Ketones, Amides and Acids****C. Linker for the formation of Aldehydes and Ketones****D. Linker for the formation of Alcohols and Acids****E. Linker for the formation of Amines and Alcohols****F. Linker for the formation of Esters, Thioesters, Amides, and Alcohols****G. Linker for the formation of Sulfonamides and Alcohols**

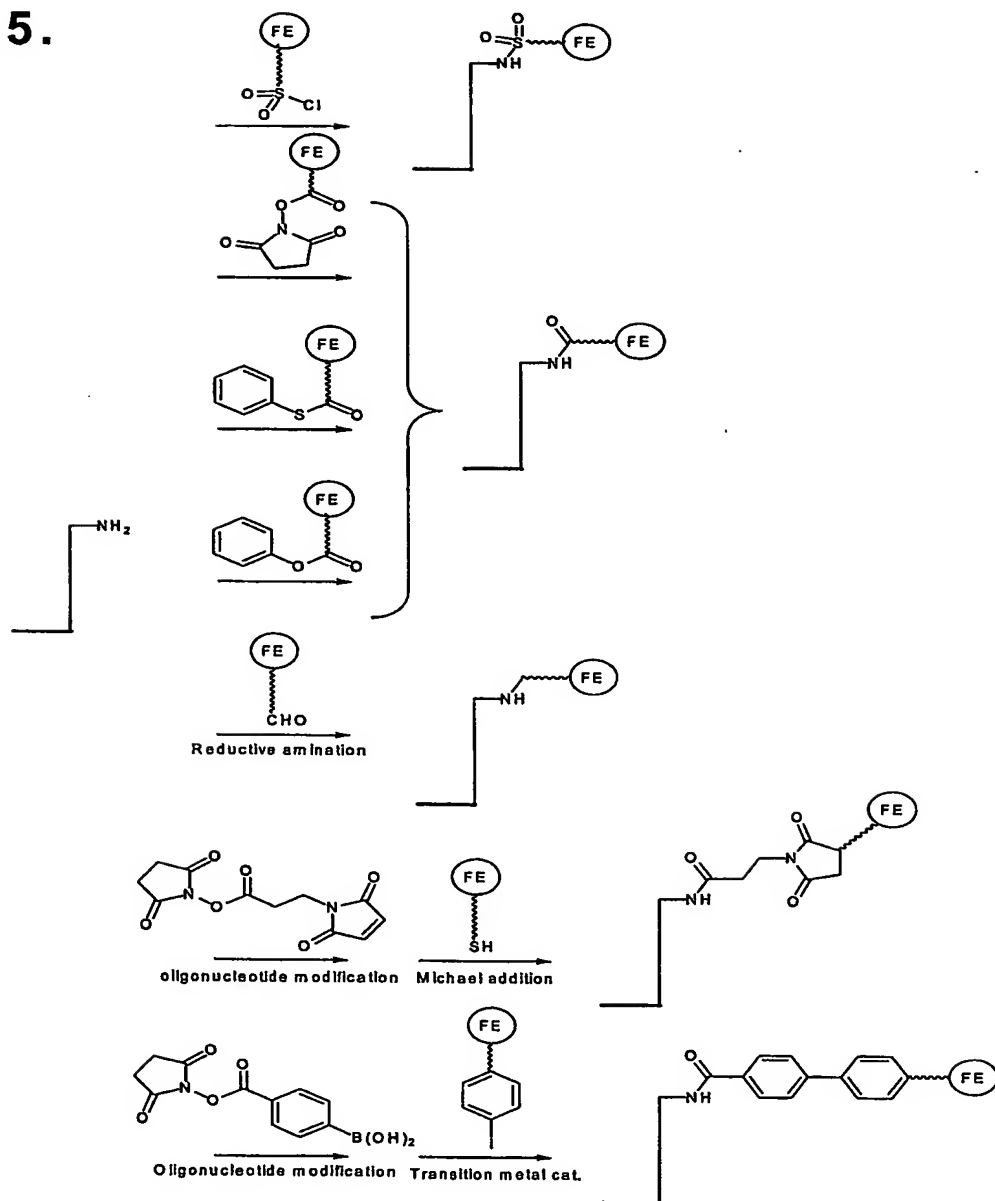
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Fig. 11



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5.



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Fig 12.

A typical panning protocol for selection of templated molecules

